

REMARKS

Prior to this Reply, Claims 1-12 and 30-39 were pending. Through this Reply, Claims 4 and 33 have been amended, while Claims 40 and 41 have been added. No claims have been cancelled. Accordingly, Claims 1-12 and 30-41 are now at issue in the present case.

I. Rejection of Claims 1, 2, 6 and 12 Under 35 U.S.C. § 102(e)

In the Office Action, the Examiner rejected Claims 1, 2, 6 and 12 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,351,342 to Elliott et al. (hereinafter "Elliott"). Applicants respectfully traverse the rejection because Applicants believe that Elliott fails to disclose all of the limitations of the rejected claims.

Specifically, with respect to Claim 1, Elliott does not teach:

"one or more head interfaces, each head interface electrically connected to a transducer head for controlling the transducer head for data read and/or write operations;" and

"a mode controller electrically connected to each head interface, for controlling the operation of each head interface for selectively reading data from at least one recording surface via at least one transducer head while writing data to at least one recording surface via at least one transducer head."

As described in Col. 2, lines 1-16, Elliott is directed to a servo system that positions a transducer over a disc surface in a disc drive system. Disc surfaces in the drive each have a plurality of spaced servo samples recorded thereon. *The servo samples on at least two of the disc surfaces are recorded in skewed relation to one another.* A plurality of transducers are provided and one transducer is associated with each one of the plurality of disc surfaces. An actuator arm assembly is coupled to the transducers to move the transducers relative to the disc surfaces. A

servo control system is coupled to the actuator arm assembly to control position of the actuator arm assembly. *The servo control system includes a reader configured to read servo samples from at least two disc surfaces such that at least two servo samples are read within one servo time period.* The skewed servo samples on different disk surfaces allow reading servo samples from those different disk surfaces during a servo time period, which means more servo samples are obtained during a single servo time period for servoing.

Therefore, unlike the present invention, Elliott does not disclose “selectively reading data from at least one recording surface via at least one transducer head while writing data to at least one recording surface via at least one transducer head,” as required by Claim 1.

In rejecting Claim 1, the Examiner relied on Elliott’s FIG. 3 and Col. 5, line 65 to Col. 6, line 7. In FIG. 3, Elliott shows a disk drive system which Elliott describes in Col. 4, line 44 to Col. 5, line 23 as follows:

...The embodiment shown in FIG. 3 provides a small quantity of additional hardware on the drive so that multiple servo bursts can be read even during a track following operation.... [A] plurality of preamplifiers 22₀ through 22_n are provided in the circuit, along with additional filtering circuit 40 and a multiplexer 42....

With feedback system 38, and during a track following operation, the selected transducer 20 provides its read signal to preamplifier 22₀ which, in turn, provides an amplified signal to read/write channel 24....

However, the output of preamplifier 22₀ is also provided to filter circuit 40. In addition, a suitable number of other transducers 20 also provide read signals to the remainder of preamplifiers 22. The output of those preamplifiers provide amplified read signals to filtering circuit 40 which, in turn, provides a filtered output signal to multiplexer 42....

...Servo control processor 28 controls multiplexer 42 to switch through the various transducers 20 in order to read multiple servo bursts during each servo time period t_1 .

Of course, servo control processor 28 can control multiplexer 42 to read from any suitable number of transducers 20 during a track following operation such that the servo sampling rate is increased to a desired level.... However, with the simple addition of a small amount of preamplifying circuitry 22₀ through 22_n as well as filtering circuitry 40 and multiplexing circuitry 42, feedback system 38 provides the ability to

increase the servo sampling rate even while data is being read during a track following operation.

Accordingly, Elliott does not teach the limitation of “selectively reading data from at least one recording surface via at least one transducer head while writing data to at least one recording surface via at least one transducer head,” as required by Claim 1. Indeed, as the above-quoted passage clearly shows, Elliott simply discloses a disk drive with servo samples on at least two of the disc surfaces which are recorded in skewed relation to one another. Then, Elliott uses at least two transducers to read servo samples from at least two corresponding disk surfaces during each servo time period t_1 . As such, at least two servo samples are read within one servo time period t_1 , whereby the servo sampling rate is increased. Elliott increases the servo sampling rate by: “... alternately switching between two transducers on opposite sides of a disc to double the sample rate” and “...optionally switch[ing] between three or more transducers 20 to read from the surfaces of multiple discs to drastically increase the servo sampling rate” (Col. 5, lines 26-31). This is further made clear by the timing diagrams in FIGS. 2A and 2B of Elliott, which illustrate the reading of servo samples from multiple disk surfaces during a servo time period to increase the sampling rate (see, Col. 3, line 12 to Col. 4, line 16 of Elliott).

Accordingly, Elliott fails to teach or disclose the limitation of “selectively reading data from at least one recording surface via at least one transducer head while writing data to at least one recording surface via at least one transducer head,” as required by Claim 1.

The Examiner relies on the language in the claims in Col. 5, line 65 to Col. 6, line 7 of Elliott for the proposition that Elliott discloses “selectively reading data from at least one recording surface via at least one transducer head while writing data to at least one recording surface via at least one transducer head,” as required by Claim 1. As discussed, Elliott does not

disclose such limitations, and neither the Examiner, nor Elliott (in the description of the invention in U.S. Patent No. 6,351,342 to Elliott), provide support for Examiner's proposition. If the Examiner disagrees, Applicants respectfully request the Examiner to specifically point to such support in the description of the invention in Elliott.

Further, Applicants respectfully submit that it is well settled that the claims in a patent are interpreted in view of the description. In Col. 5, line 50 to Col. 6, line 5, Claim 1 of Elliott states:

1. A method of controlling position of an actuator arm in a disc drive, comprising:
 - providing a disc having first and second disc surfaces, each of the first and second disc surfaces having servo samples recorded thereon, the servo samples recorded on the first and second disc surfaces being in skewed relation to one another and separated by a servo spacing;
 - moving the first and second disc surfaces relative to first and second transducers, each of the first and second transducers being positioned relative to one of the first and second disc surfaces to read information therefrom, the servo samples on each disc surface moving past the corresponding transducer at a rate of one servo sample each servo time period;
 - writing data to the first disc surface, the data including servo samples;
 - during writing data to the first disc surface, reading servo samples intermittently from the second disc surface; and
 - controlling the position of the actuator arm based on the servo samples read.

In Claim 1, Elliott mentions: "writing data to the first disc surface, the data including servo samples; during writing data to the first disc surface, reading servo samples intermittently from the second disc surface." Applicants believe that there is no support in the description section and drawings of Elliott, as to data that includes servo samples that is written to the first disc surface. Indeed, in its description section and drawings, Elliott appears to disclose a disk drive with servo samples on at least two of the disc surface which are skewed in relation to one another, wherein at least two transducers read servo samples from at least two corresponding

disk surfaces during each servo time period t_1 (i.e., at least two servo samples are read within one servo time period t_1), so that the servo sampling rate is increased. Elliott does not describe “writing servo samples,” and, indeed, doing so does not make any sense whatsoever in the context of Elliott’s system. If the Examiner disagrees, Applicants respectfully request the Examiner to specifically point to such support in the description of the invention in Elliott.

In view of the description of Elliott, it is likely that language in Claim 1 of Elliott contains typographical errors. Applicants believe that Elliott intended to claim:

reading data from the first disc surface, the data including servo samples;
during reading data from the first disc surface, reading servo samples
intermittently from the second disc surface; and controlling the position of
the actuator arm based on the servo samples read.

This interpretation is supported by the description and drawings in Elliott. According to this believed-to-be correct interpretation, servo samples are read from a first disk surface and servo samples read intermittently from a second disk surface, which provide an increased number of servo samples per sampling period. Then, the read servo samples are used to control the position of the actuator arm, as described in the description and drawings of Elliott. If the Examiner disagrees, Applicants respectfully request the Examiner to specifically point to contrary support in the description of the invention in Elliott.

Further, Elliott does not disclose “a mode controller [that is] electrically connected to each head interface, for controlling the operation of each head interface for selectively reading data from at least one recording surface via at least one transducer head while writing data to at least one recording surface via at least one transducer head,” as required by Claim 1. Instead, Elliott discloses a servo control processor 28 that can control a multiplexer 42 to read from any

suitable number of transducers 20 during a track following operation such that the servo sampling rate is increased to a desired level (Col. 5, lines 4-12). This has nothing to do with the mode controller, as claimed in Claim 1.

Therefore, for at least the above reasons, it is respectfully submitted that Claim 1, and the claims that depend directly or indirectly therefrom (namely, Claims 2-12 and 40), are patentably distinguishable from Elliott.

II. Rejection of Claims 3-5, 7-11 and 30-39 Under 35 U.S.C. § 103(a)

The Examiner rejected Claims 3-5, 7-11 and 30-39 under 35 U.S.C. § 103(a) as being unpatentable over Elliott in view of U.S. Patent No. 6,219,722 to Tomita (hereinafter "Tomita"). Applicants respectfully traverse the rejection because the references, either alone or in combination, do not teach all of the limitations of the rejected claims.

At the outset, Applicants note that Claims 3-5 and 7-11 all depend (directly or indirectly) from Claim 1. Accordingly, for at least the same reasons provided above with respect to Claim 1, Applicants submit that Claims 3-5 and 7-11 are patentable.

Further, with respect to Claim 3, the Examiner correctly states that Elliott does not disclose a mode controller that "controls the operation of the head interfaces based on configuration information, wherein the configuration information includes data transfer mode and transducer head selection information," as required by Claim 3. However, the Examiner argued that Tomita, in Col. 5, line 54 to Col. 6, line 31, discloses such limitations. Applicants respectfully disagree.

In Col. 5, line 62 to Col. 6, line 3, Tomita mentions, in relation to FIG. 1, that:

When a write access is received from the host, the MCU 28 stores write data into the buffer RAM 44 and, after that, generates a write gate

signal from the hard disk controller 30 to the read channel circuit 32, thereby setting the read channel circuit into a write operating mode. At the same time, the MCU 28 instructs the chip selection, write operating mode, and head selection to the head IC 14 via the control logic circuit 34 by the serial transfer and likewise sets it into the write operating mode.

As detailed above, Elliott does not disclose a mode controller that operates to provide the features of “selectively reading data from at least one recording surface via at least one transducer head while writing data to at least one recording surface via at least one transducer head,” as required by Claim 1. And, as the above passage from Tomita illustrates, Tomita does not disclose such a mode controller either. Nor does Tomita, alone or in combination with Elliott, disclose a mode controller that operates to provide the above features “based on configuration information, wherein the configuration information includes data transfer mode and transducer head selection information,” as required by Claim 3. Further, although in the above-quoted passage Tomita mentions an MCU 28, which sets a read channel into a write operating mode, and instructs head selection to the head IC 14, there is no mention of configuration information that is used by the MCU 28 for such purposes. Specifically, there is no disclosure in Tomita of “configuration information” that “includes data transfer mode and transducer head selection information,” as required by Claim 3. If the Examiner disagrees, Applicants respectfully request the Examiner to specifically point to such disclosure in Tomita.

Even further, in combining Elliott and Tomita, the Examiner contends that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Elliott to include the teachings of Tomita to provide high speed head switching. The Examiner provides no citation in the prior art as to the motivation for combining such references.

It is well settled that in order for a modification or combination of the prior art to be valid, the prior art itself must suggest the modification or combination. In other words, the "...invention cannot be found obvious unless there was some explicit teaching or suggestion in the art to motivate one of ordinary skill to combine elements so as to create the same invention." *Winner International Royalty Corp. v. Wang*, No. 96-2107, 48 USPQ.2d 1139, 1140 (D.C.D.C. 1998) (emphasis added); see, also, e.g., *In re Jones*, 958 F.2d 347, 21 USPQ.2d 1941, 1944 (Fed. Cir. 1992). Applicants submit that neither of the references suggests the motivation to modify or combine the references as proposed by the Examiner.

Therefore, for at least the above reasons, Applicants submit that Claim 3, and all claims that depend therefrom, are patentably distinguishable from Elliott and Tomita, both separately and in combination.

With respect to Claim 5, the Examiner states that Tomita discloses "a control interface connected to the mode controller, the control interface for receiving configuration information wherein the mode controller controls the operation of the head interfaces based on the configuration information," as required by Claim 5. Applicants respectfully submit that Tomita does not disclose such a control interface.

The data interface of Tomita is simply for receiving control data for head switching, and is not a control interface for receiving configuration information that is used by the mode controller for reading data with one transducer while writing with another transducer. Therefore, for at least the above reasons, Applicants submit that Claim 5 is patentably distinguishable from Elliott and Tomita, both alone and in combination.

With respect to Claims 7-9, the Patent Office rejected these claims for the same reasons as Claims 1, 3 and 4. Applicants submit that, for reasons similar to those provided with respect

to Claims 1, 3 and 4, Claims 7-9 are patentably distinguishable from Elliott and Tomita, both alone and in combination.

With respect to Claim 30, the Examiner rejected such claim for the reasons the Examiner provided with respect to Claims 1, 3 and 4. For reasons similar to those given above in relation to Claims 1, 3 and 4, Applicants submit that Claim 30, and the claims that depend directly or indirectly therefrom (namely, Claims 31-39 and 41), are patentably distinguishable from Elliott and Tomita, both alone and in combination.

With respect to Claims 31-35, the Examiner rejected such claims for the reasons provided with respect to Claims 2-6. For reasons similar to those given above in relation to Claims 2-6, Applicants believe that Claims 31-35 are patentably distinguishable from Elliott and Tomita, both alone and in combination.

With respect to Claims 37-39, the Examiner cites (in part) Col. 5, lines 37-42 in rejecting such claims. Applicants respectfully traverse the Examiner's rejection.

Regarding Claim 37, as is clear from the above discussion of Elliott in relation to Claim 1, Elliott does not disclose servowriting at all. Rather, Elliott reads pre-recorded servo samples to increase servo sampling rates.

Further, Elliott does not disclose at least the following limitations required by Claim 37:

the disk drive further including a reference disk having a reference pattern thereon, wherein the transferred reference pattern comprises servo clock information providing transducer head circumferential relative position information, and servo position information providing transducer head radial relative position information;

wherein the drive controller is further configured for controlling the actuator and the preamplifier in a servo control loop, for reading the reference pattern from the reference disk via a transducer head and using the read servo clock and the servo position information to position and maintain one or more transducer heads on one or more said data disk recording surfaces while writing final servo patterns onto said one or more data disk recording surfaces.

According to Claim 37, a reference pattern on a reference on a disk is used to servo write final servo patterns, as in self-writing of servo patterns. There is no disclosure whatsoever in either Elliott or Tomita of the invention as claimed in Claim 37. FIGS. 2A-B and corresponding description in Elliott have nothing to do with: servo-writing, self-writing of servo patterns, or using a reference pattern for self-writing of servo patterns in a disk drive. Indeed, as discussed above in relation to Claim 1, FIGS. 2A-B of Elliott show timing diagrams, illustrating reading (not writing) servo samples from multiple disk surfaces during a servo time period to increase the sampling rate (Col., 3, line 12 to Col. 4, line 16). If the Examiner disagrees, Applicants respectfully request the Examiner to specifically point to teachings relating to Claim 37 in the cited references.

For at least the above reasons, Applicants submit that Claim 37 and the claims that depend therefrom (i.e., Claims 38 and 39) are patentably distinguishable from the cited references.

III. Claim Amendments and New Claims

Claims 4 and 33 were amended to correct obvious errors. Importantly, such claims were not amended to distinguish any cited references.

New Claims 40 and 41 have been added.



IV. Additional Claim Fees

In determining whether additional claim fees are due, reference is made to the Fee Calculation Table (below).

Fee Calculation Table

	Claims Remaining After Amendment		Highest Number Previously Paid For	Present Extra	Rate	Additional Fee
Total (37 CFR 1.16(c))	24	Minus	39	= 0	x \$18 =	\$ 0.00
Independent (37 CFR 1.16(b))	2	Minus	4	= 0	x \$86 =	\$ 0.00

As set forth in the Fee Calculation Table (above), Applicants previously paid claim fees for thirty-nine (39) total claims and for four (4) independent claims. Accordingly, Applicants believe that no additional claim fees are due. Nevertheless, the Commissioner is hereby authorized to charge Deposit Account No. 50-2198 for any fee deficiencies associated with filing this paper.

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V. Conclusion

Applicants believe that the application appears to be in form for allowance. Accordingly, reconsideration and allowance thereof is respectfully requested.

The Examiner is invited to contact the undersigned at the below-listed telephone number regarding any matters relating to the present application.

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